N° CERCLIS ENTRY

PRE-CERCLIS SITE SCREENING REPORT

Carthage FMGP #1 Site
Jasper County, Missouri

March 30, 1998

Site: Carthage #1
ID #: MO0000704688
Break: 1.0
Other: 3-30-98
BD

Missouri Department of Natural Resources
Division of Environmental Quality
Hazardous Waste Program

TABLE OF CONTENTS

I. SITE SCREENING NARRATIVE REPORT

CARTHAGE FMGP #1 SITE

Site Screening Narrative Report

A. Introduction

The Missouri Department of Natural Resources (DNR), through a Cooperative Agreement (CA V997381-97-0) with the U.S. Environmental Protection Agency (EPA), conducted a Pre-CERCLIS [Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Information System] Site Screening (SS) at the Carthage FMGP #1 site. The assessments of Carthage FMGP #1 was part of a statewide effort to locate and evaluate the potential hazards posed by Missouri FMGP sites. The purpose of this investigation was to determine whether the site is eligible for entry into CERCLIS, EPA's inventory of potential hazardous substance sites.

The Carthage FMGP #1 site is the location of a former manufactured gas plant (FMGP) located in the north portion of Carthage, Jasper County, Missouri. In November of 1995, Dr. Allen Hatheway forwarded the Superfund Section a summary of the historical background of the Carthage #1 and #2 FMGPs (Reference 1). Since the site was occupied by the turkey processing plant, there were issues concerning the health and safety of plant workers. The scope of the investigation included review of Sanborn Fire Insurance Maps, file information, a site visit on September 15, 1997 and site sampling on October 3, 1997.

B. Site Description

The Carthage FMGP #1 site is the current location of an active ConAgra Butterball Turkey Plant. It is located at 411 North Main in Carthage, Missouri. The site is situated in the N 1/2, of NE 1/4, of NE 1/4, Section 4, Township 28N, Range 31 W, in Jasper County (See Site Location Map in Section II). The underground FMGP structures are covered by an asphalt parking lot and the processing plant. The FMGP #1 site was located at the SE corner of Main St. and Limestone St. (Reference 3). Limestone St. is now called Clayton St. as depicted in the Site Sketch Sampling Map in section III. The site encompasses approximately two acres. The surrounding land use is mainly industrial.

C. Site History/Ownership Information

The Carthage #1 and #2 plants furnished both light and heat to the city of Carthage using the coal carbonization method of gasification. The on-site building for FMGP #1 appears to have housed the purifying room, meter room, and several retorts during the FMGP operations. One gas holder located southwest of the building had a capacity of 25,000 cubic feet. A tar well was also located on the site (Reference 2). Construction of Carthage FMGP #1 was completed in July 1878 (Reference 1). Carthage #1 appeared on Sanborn

maps in 1888 back to back with Carthage #2. In 1908 Carthage FMGP #1, owned by the Carthage Gas Co., became non-operational. The 1909 Sanborn map shows that the site is vacant and all structures have been demolished (Reference 4).

In 1935 the defunct Carthage Gas Co. was taken over by a holding company, and later became the Gas Service Company. The Gas Service Co. obtained the holdings of the former Carthage Gas Co. In March of 1949, lot 420, located directly south of Carthage #1 is purchased by Carthage Foundry and Machine Co. In June of 1972, Carthage Foundry and Machine Co. transferred lots 420, 421, and 422 to United Bank of Carthage. In June of 1979, the bank returned lots 420, 421, and 422 to Carthage Foundry and Machine Co. and they sold those lots to L.C., Shriber Cheese Company. L.C., Shriber Cheese Co. then sold the property to Country Pride Foods, for use By ConAgra "Butterball" Turkey processing plant, now occupying the property. Currently three buildings and asphalt concrete pavement cover the entire property, including the former Carthage FMGPs #1 and #2.

Carthage FMGP #1 was investigated to determine if there were hazardous substances present on-site. The residual materials left by these plants often included coal tar, which is a known human carcinogen. Exposure to this material may pose human health risks.

D. Site Reconnaissance/Sampling

A site visit was made on September 15, 1997. HWP personnel met with Don Hardwick, engineering manager for the Butterball Turkey Co to discuss the intentions of the investigation.

On October 3, 1997 Environmental Services and HWP personnel conducted a sampling event at the Carthage FMGP #1 and #2 sites. The Site Sketch/Sampling Map in Section III shows the sampling points. The Analytical Data Table in Section IV reports the sample numbers, locations, results, and applicable regulatory levels.

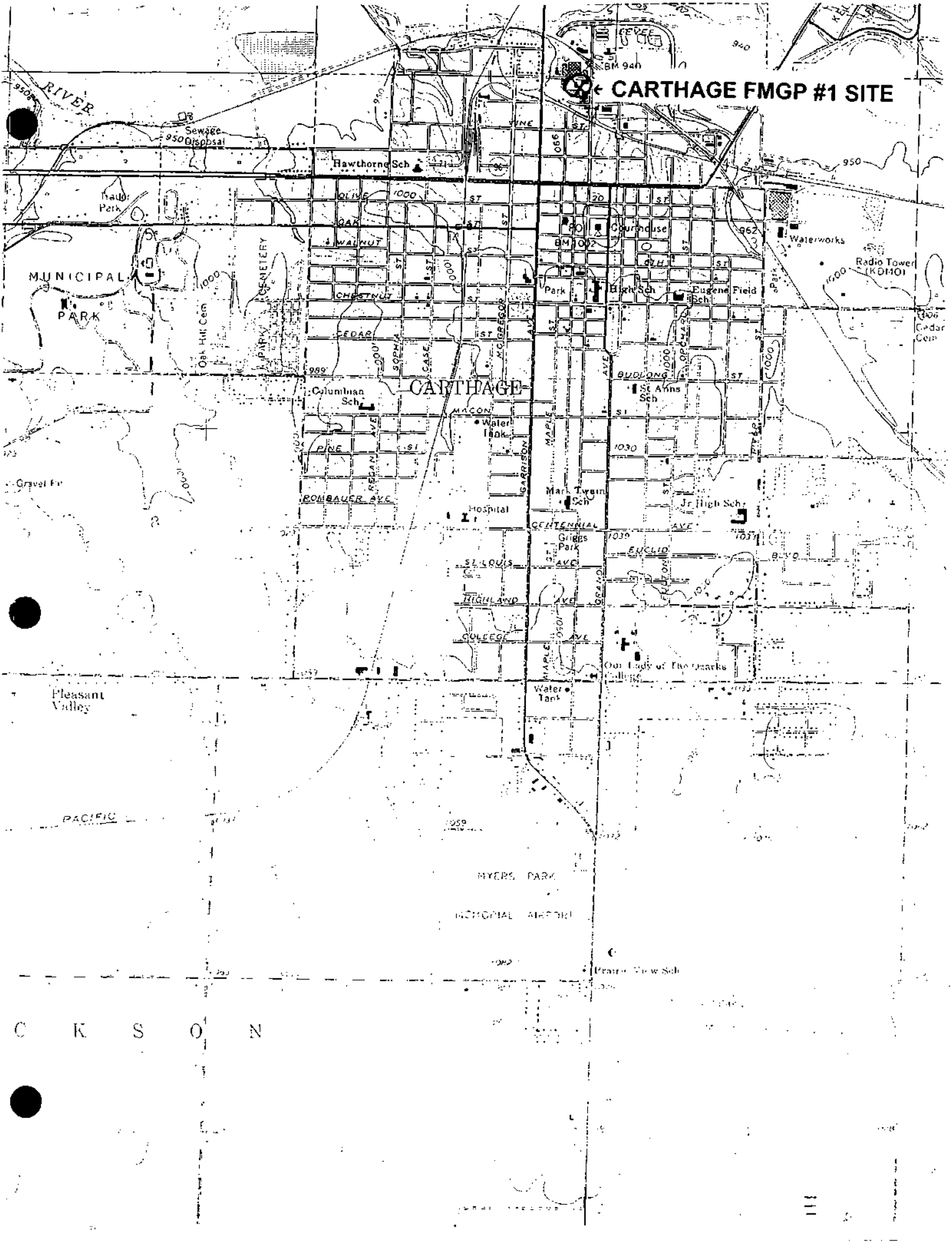
Five soil grab samples were collected. The first four samples were collected from FMGP #1 and the fifth was collected from FMGP #2. Sample numbers 97-8193, 97-8194, and 97-8195 were collected directly north of the processing building, 115 feet west of northeast side of building at depths of 2-4, 6-7, and 8-10 feet. Sample number 97-1896, was collected directly north of the processing building, 135 feet west of northeast side of building at a depth of 2-4 feet. Sample number 97-8198, was collected directly north of the processing building, 275 feet west of northeast side of building at a depth of 6-8 feet. The samples collected from 2-4' depth (97-8193 & 97-8196) appeared to contain coal debris. All of the samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs).

Sample numbers 97-8193, 97-8194, 97-8195, and 97-1896 were field screened through the use of a PAH immunoassay kit, performed at the HWP office on October 6, 1997. The immunoassay had a PAH detection limit of 1, 20, and 100 parts per million (ppm). PAHs were detected above 20 ppm, but lower than 100 ppm, in samples 97-8193 and 97-8196. PAHs were not detected above 1 ppm in samples 97-8194 and 97-8195. As a quality control check a minimum of 10% of the positive and 10% of the negative immunoassay results are submitted to the laboratory for confirmation. Sample 97-8194 was not analyzed at the lab. Sample # 97-8193 and 97-8195 had PAH levels that exceeded either the U.S. Environmental Protection Agency (EPA) Superfund Chemical Data Matrix health based screening values or the Missouri Department of Health (DOH) Any-Use Soil Levels. Both of the samples with elevated PAH's were obtained from subsurface samples, below an asphalt cover. The current site conditions are not considered to be a threat to human health or the environment.

E. Conclusions

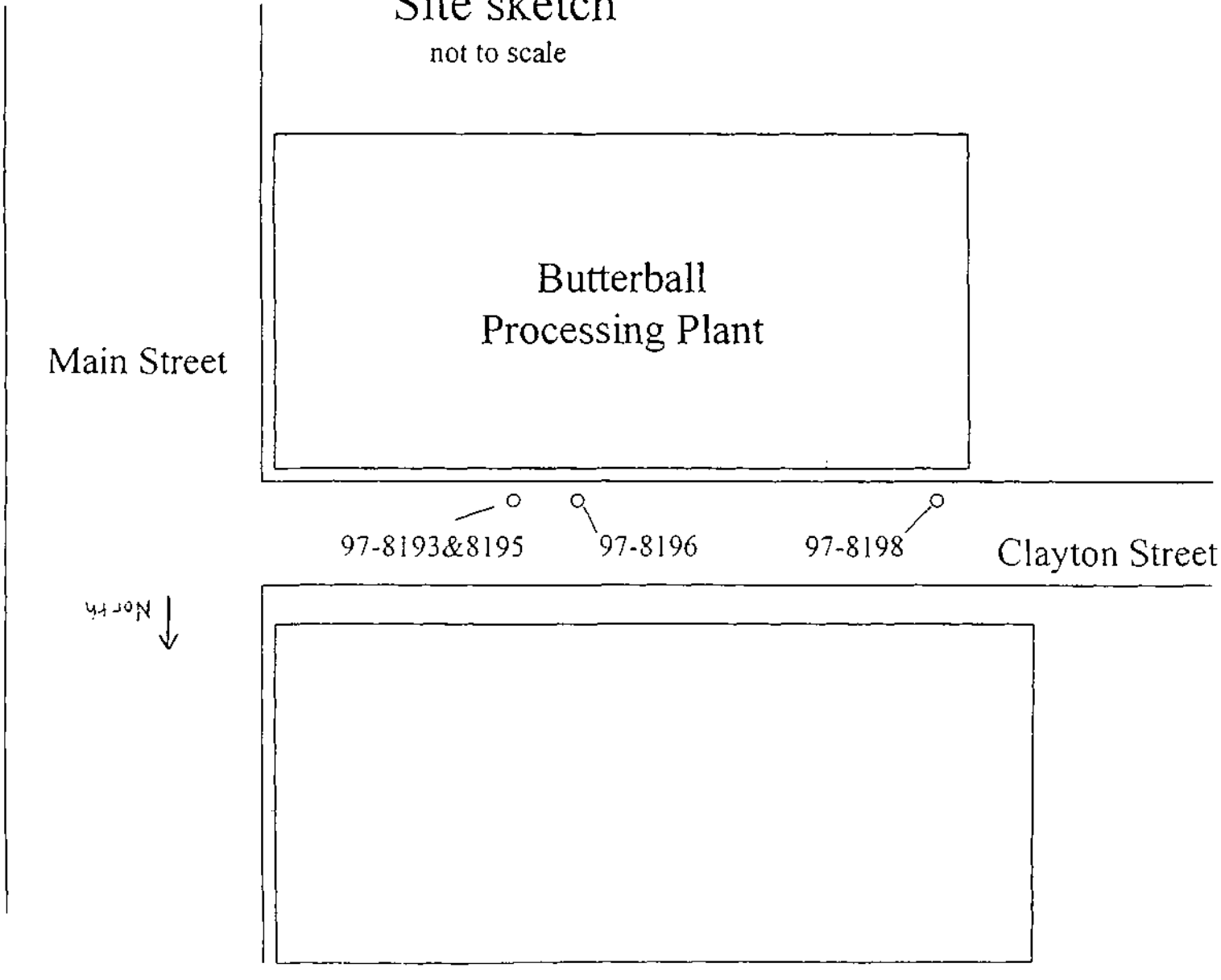
Based upon the current site conditions and the sample results, this site is not recommended for entry into CERCLIS at this time. The present site conditions include an active turkey processing plant with a concrete floor, and an asphalt road adjacent to the processing building. The plant's concrete floor and asphalt road act as cap, protecting the workers and other individuals from potential exposure that may result from subsurface contamination. Additional site characterization would be disruptive to the operation of the ConAgra Butterball Turkey Plant, and is not considered necessary at this time. A voluntary notice should be filed on the property deed, explaining the known and suspected contamination. Further sampling is recommended when the turkey processing plant ceases operation. Further action under CERCLA, or any other authority is not warranted.

II. SITE LOCATION MAP


CARTHAGE FMGP #1 SITE
CARTHAGE
RIVER
Sewage Disposal
Hawthorne Sch
Courthouse
Waterworks
Radio Tower (KDMO)
MUNICIPAL PARK
Oak Hill Cem
Columbian Sch
Water Tank
St Anns Sch
High Sch
Eugene Field Sch
Mark Twain Sch
Jr High Sch
Hospital
Gregg Park
Water Tank
Pleasant Valley
PACIFIC
MYERS PARK
MEMORIAL AIRPORT
Prairie View Sch
C K S O N

III. SITE SKETCH/SAMPLING MAP

Carthage FMGP 1&2
Site sketch
not to scale



IV. ANALYTICAL DATA TABLE

Table 1. Analytical Results for Samples Taken from Carthage FMGP #1 & #2 sites on October 3, 1997

All results in Parts Per Billion (PPB) -- denotes Non-Detect na -denotes not applicable unless otherwises denoted

Substance	97-8193 # 1, soil grab, Butterball wasll 115' (24-48") depth	97-8195 # 1, soil grab, Butterball wall 115' (8-10') depth	97-8196 # 1, soil grab, Butterball wall 135' (2-4') depth	97-8198 #2, soil grab, Butterball wall 275' (6-8') depth	ASL
Naphthalene	8,400	--	4,000	--	230,000
Acenaphthylene	2,600	--	700	--	--
Acenaphthene	1,500	--	440	--	3,400,000
Fluorene	4,200	--	700	--	2,300,000
Phenanthrene	54,000	--	12,000	--	--
Anthrancene	10,000	190	1,600	--	17,000,000
Fluoranthene	30,000	230	8,200	--	2,300,000
Pyrene	61,000	360	14,000	--	1,700,000
Benzo(a)anthracene	**17,000**	190	**6,200**	--	**4,500**
Chrysene	45,000	120	8,900	--	160,000
Benzo(b)fluoranthene	**13,000**	--	3,500	--	**4000**
Benzo(k)fluoranthene	12,000	--	4,300	--	34,000
Benzo(a)pyrene	**52,000**	--	**9,600**	--	**680**
Dibenz(a,h)anthracene	**7,800**	--	**1,300**	--	**620**
Benzo(g,h,i)perylene	12,000	--	6,600	--	--
Indeno(1,2,3-cd)pyrene	12,000	--	5,100	--	12,000

V. PRE-CERCLIS SCREENING FORM

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

I. SITE NAME AND LOCATION

NAME: Carthage FMGP #1 ALIAS:

ADDRESS OR OTHER LOCATION IDENTIFIER: 411 N. Main

CITY: Carthage	COUNTY: Jasper	STATE: Missouri	ZIP: 64836

DIRECTIONS TO SITE:
Take I-44 west in Springfield, Missouri to Missouri Highway 96 West. Highway 96 will take you to Carthage. Take the Central Street exit and travel north one mile. Turn west from Central to Main Street and travel approximately two blocks. The Butterball Plant is located at corner of Main and Clayton Streets.

MAP ATTACHED:

II. SITE REFERRAL INFORMATION

REFERRED BY: Dr. Allen Hatheway	DATE OF REFERRAL: November 30, 1995

REASON FOR REFERRAL (if applicable):

MAILING ADDRESS: 129 V. H. McNutt Hall, Department of Geological & Petroleum Engineering

CITY: Rolla	STATE: Missouri	ZIP: 65401-0249
TELEPHONE: 573-341-4867	FAX: 573-341-6935	

III. SITE INFORMATION

TYPE OF FACILITY: Turkey processing plant	TYPE OF OWNERSHIP: Private

OWNER NAME, MAILING ADDRESS: Butterball Turkey Company, 411 N. Main

CITY: Carthage	STATE: Missouri	ZIP: 64836
TELEPHONE: 417-358-5914	FAX: 417-358-6553	

OPERATOR NAME (if different from owner), MAILING ADDRESS:

CITY:	STATE:	ZIP:
TELEPHONE:	FAX:	

CURRENT SITE STATUS: Buildings (Y) or N Occupied (Y) or N (circle one)	YEARS OF OPERATION: 1979-Present

FMGP OPERATIONAL HISTORY:

Type of gasification process utilized: Coal carbonization

Time frame of FMGP operations on the property: 1878-1908

(revised by Missouri DNR 1/24/97)

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

FMGP OPERATIONAL HISTORY (continued):

Are there existing buildings/structures/foundations that remain from FMGP operations? Explain.
No buildings, and no visual signs of structures or foundations. It is possible that some subsurface FMGP structures or foundations remain under the turkey processing building.

Is there evidence of any waste remains on the surface soils (e.g. prussian blue, dried tar, etc)? Explain.
None observed at the surface. Samples taken from 2 - 4' depth contained coal debris.

Years of Sanborn Maps utilized for report [if available (attach)]:
December 1888, July 1893, June 1897, October 1902, December 1909.

Years of Bird's Eye Aerial Maps utilized for report [if available (attach)]:

OWNERSHIP HISTORY:

List past owners/operators of the site:
Carthage Gas Light Company; Carthage Light and Fuel Company; Carthage Light, Heat & Power Company.

Do any of the past owners comprise a utility in operation today?
Unknown

Other historical references utilized for this report (e.g. interviews, historical society, etc):

Dr. Allen Hatheway contributed information regarding this site.

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

IV. CERCLA APPLICABILITY

1. IS THERE A RELEASE AS DEFINED BY THE NCP? YES X NO

EXPLAIN: Sample results indicated PAH hazardous substances.

(A RELEASE is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant), but excludes: workplace exposures; engine exhaust emissions; nuclear releases otherwise regulated; and the normal application of fertilizer. For purposes of the NCP, release also means threat of release.[40 CFR 300.410(e)])

2. IS THE SOURCE A FACILITY OR VESSEL AS DEFINED BY THE NCP? YES X NO

EXPLAIN: Hazardous substance(s) deposited on site.

(A FACILITY is defined as any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or POTW), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel. A VESSEL is defined as any description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel. [40 CFR 300.410(e)]

3. DOES THE RELEASE INVOLVE EITHER A HAZARDOUS SUBSTANCE, POLLUTANT OR CONTAMINANT AS DEFINED BY THE NCP? YES X NO

EXPLAIN: Sample results indicated PAH hazardous substances.

(A HAZARDOUS SUBSTANCE means any substance, element, compound, mixture, solution, hazardous waste, toxic pollutant, hazardous air pollutant, or imminently hazardous chemical substance or mixture designated pursuant to the CWA, CERCLA, SDWA, CAA or TSCA. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas. The definition of POLLUTANT or CONTAMINANT includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or physical deformations, in such organisms or their offspring. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas.).[40 CFR 300.410(e)]

4. IS THE RELEASE SUBJECT TO THE LIMITATIONS ON RESPONSE? YES NO X

EXPLAIN:

(The LIMITATIONS ON RESPONSE provisions of the NCP (40 CFR 300.400(B) states that removals shall not be undertaken in response to a release: of a naturally occurring substance in its unaltered or natural form; from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use.).[40 CFR 300.410(e)]

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

IV. CERCLA APPLICABILITY (continued)

5. IS THERE A POTENTIAL FOR OTHER FEDERAL OR STATE RESPONSE MECHANISMS? YES NO X
IF SO, IDENTIFY THE APPROPRIATE PROGRAM:

RCRA NRC FIFRA UST OTHER FEDERAL ( )
OTHER STATE DEFERRAL STATE VCP

EXPLAIN: Not at this time. When the processing plant ceases operation, more extensive investigation/sampling should be conducted.

V. PATHWAY EVALUATION NOT APPLICABLE

1. SOURCE AND WASTE CHARACTERISTICS (known or suspected)

SOURCE TYPES AND LOCATIONS:

SIZE OF SOURCES:

WASTE TYPES AND QUANTITIES (utilize Brown's Directories & show calculations, if possible):

HAZARDOUS SUBSTANCES PRESENT:

2. GROUNDWATER USE AND CHARACTERISTICS WITHIN FOUR MILES

GENERAL HYDROLOGY:

ARE KARST FEATURES PRESENT ON OR NEAR SITE:

DEPTH TO SHALLOWEST GROUNDWATER:

GROUNDWATER WELLS WITHIN 4 MILES:
PRIVATE WELLS
MUNICIPAL WELLS
INDUSTRIAL/AGRICULTURAL WELLS

LOCATIONS AND POPULATIONS SERVED (if known):

DISTANCE TO NEAREST DRINKING WATER WELL:

3. SURFACE WATER USE AND CHARACTERISTICS

IS SITE IN A FLOOD PLAIN: IF YES: 10 YEAR 100 YEAR 500 YEAR

DISTANCE TO NEAREST SURFACE WATER; IF WITHIN TWO MILES, FILL OUT SURFACE WATER PATHWAY

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

LIST SURFACE WATER BODIES WITHIN 15 DOWNSTREAM MILES:

DRINKING WATER INTAKES PRESENT WITHIN 15 DOWNSTREAM MILES: YES NO

IF YES, LIST LOCATIONS AND POPULATIONS SERVED (if known):

ARE FISHERIES, SENSITIVE ENVIRONMENTS OR WETLANDS PRESENT WITHIN 15 DOWNSTREAM MILES: YES NO
(List significant features, if known or applicable):

4. SOIL AND AIR EXPOSURE CHARACTERISTICS NOT APPLICABLE

NUMBER OF PEOPLE LIVING WITHIN 200 FEET OF SITE:

SCHOOLS OR DAYCARES WITHIN 200 FEET OF SITE:

GENERAL POPULATION WITHIN 4 MILES (rural, small city, heavy urban area, etc.):

NUMBER OF WORKERS ON-SITE:

ARE ANY TERRESTRIAL SENSITIVE ENVIRONMENTS AND/OR WETLANDS PRESENT ON-SITE: YES NO

IS SITE ACCESS RESTRICTED: YES NO

VI. SUPERFUND SITE SCREENING CRITERIA

1. DOES THE QUANTITY OR CONCENTRATION OF HAZARDOUS SUBSTANCES WARRANT RESPONSE? YES NO X

EXPLAIN: The current site conditions are not considered to be a threat to human health or the environment at this time. Further sampling is recommended when the processing plant ceases operation.

[40 CFR 300.410(e)]

(revised by Missouri DNR 1/24/97)

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

2. HAS A PRP BEEN IDENTIFIED? YES X NO

EXPLAIN: Several prior owners have been identified, which may be PRP's.

[40 CFR 300.410(e)]

3. IS THERE AN ACTUAL OR POTENTIAL EXPOSURE TO HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS? YES X NO

EXPLAIN: There does not appear to be a current risk of exposure, however there is a potential for exposure if the asphalt or concrete cover is breached.

4. IS THERE AN ACTUAL OR A POTENTIAL THREAT FOR CONTAMINATION OF DRINKING WATER SUPPLIES? Unknown YES NO

EXPLAIN:

5. ARE THERE HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS IN DRUMS, BARRELS, OR BULK STORAGE CONTAINERS? YES NO X

EXPLAIN:

6. ARE THERE HIGH LEVELS OF HAZARDOUS SUBSTANCES, POLLUTANTS, OR CONTAMINANTS IN SURFACE SOILS? YES NO X

EXPLAIN:

("High levels" may be determined by streamlined risk assessments, health consultations, state or federal soil screening criteria, and/or Superfund program policies or directives.)

7. ARE THERE CONDITIONS ON SITE WHICH MAY BE SUSCEPTIBLE TO IMPACT FROM ADVERSE WEATHER CONDITIONS? YES NO X

EXPLAIN:

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

8. IS THERE A THREAT OF FIRE OR EXPLOSION?	YES	NO X
EXPLAIN:		
9. ARE THERE OTHER SITUATIONS OR FACTORS WHICH WARRANT FURTHER SUPERFUND RESPONSE?	YES	NO X
EXPLAIN:		

VII. SUPERFUND SITE SCREENING FINDINGS AND RECOMMENDATIONS

X	NO FURTHER SUPERFUND RESPONSE ACTION REQUIRED - SUPERFUND CERCLIS ENTRY NOT WARRANTED (at this time)

Cite the appropriate criteria below as the basis for the above determination.

		NO RELEASE OR THREAT OF RELEASE	X	NO AIR PATHWAY THREAT
		NOT A FACILITY OR VESSEL	X	NO THREAT OF FIRE OR EXPLOSION
		NO ACTUAL OR POTENTIAL EXPOSURE THREATS	X	DRUMS, BARRELS OR BULK CONTAINERS NOT PRESENT
		NO GROUNDWATER PATHWAY THREAT	X	SITE NOT SUSCEPTIBLE TO ADVERSE WEATHER CONDITIONS
		NO SURFACE WATER PATHWAY THREAT		SITE SUBJECT TO RESPONSE LIMITATIONS
	X	NO DIRECT SOIL EXPOSURE PATHWAY THREAT		WILLING/CAPABLE PRP RESPONSE
	X	NO HIGH LEVELS OF CONTAMINANTS IN SURFACE SOILS		REFERRED TO ANOTHER PROGRAM

COMMENTS: The current site conditions are not considered to be a threat to human health or the environment at this time. Further sampling is recommended when the processing plant ceases operation. A voluntary notice should be filed on the property deed, explaining the known and suspected contamination.

VI. SUPERFUND SITE SCREENING FINDINGS AND RECOMMENDATIONS (continued)

	REMOVAL ACTION RECOMMENDED: ___EMERGENCY ___TIME-CRITICAL ___NON-TIME-CRITICAL

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

Cite one or more of the conditions or factors below as a basis for recommending that a removal action be conducted.

		EXPOSURE TO HAZARDOUS SUBSTANCES OR POLLUTANTS OR CONTAMINANTS		ADVERSE WEATHER IMPACTS
		CONTAMINATED DRINKING WATER		FIRE/EXPLOSION THREAT
		CONTAMINATED SOIL		NO OTHER RESPONSE MECHANISM
		DRUMS, BARRELS OR CONTAINERS		OTHER FACTORS

COMMENTS:

(Complete Removal Evaluation Form for sites recommended for a Removal Action.)

ADDITIONAL INTEGRATED ASSESSMENT RECOMMENDED

Cite the appropriate criteria below as a basis for recommending that additional site evaluation be performed.

		THERE HAS BEEN A RELEASE OF HAZARDOUS SUBSTANCES, POLLUTANTS OR CONTAMINANTS		DRUMS, BARRELS OR CONTAINERS ARE, OR MAY BE, PRESENT
		THERE IS A GROUNDWATER PATHWAY THREAT		CONTAMINANTS MAY BE PRESENT IN SUFFICIENT QUANTITY AND/OR CONCENTRATION
		THERE IS A SURFACE WATER PATHWAY THREAT		THERE IS AN ACTUAL OR POTENTIAL EXPOSURE THREAT
		THERE IS A DIRECT SOIL EXPOSURE PATHWAY THREAT		THERE IS, OR MAY BE, A THREAT OF FIRE OR EXPLOSION
		THERE ARE, OR MAY BE, HIGH LEVELS OF CONTAMINANTS IN SURFACE SOILS		THE SITE IS SUSCEPTIBLE TO ADVERSE WEATHER CONDITIONS
		THERE IS AN AIR PATHWAY THREAT		THERE ARE NO WILLING/CAPABLE PRPs WILLING TO RESPOND AT THIS TIME
		THERE ARE ENDANGERED SPECIES, WETLANDS, OR OTHER SENSITIVE ENVIRONMENTS WHICH MAY BE IMPACTED BY THE SITE		CERCLA "LIMITATIONS ON RESPONSE" PROVISIONS DO NOT APPLY

MISSOURI SUPERFUND SITE PRE-CERCLIS SCREENING FORM
FORMER MANUFACTURED GAS PLANTS (FMGP'S)

ADDITIONAL INTEGRATED ASSESSMENT RECOMMENDED (continued)				
		THERE ARE NO OTHER FEDERAL, STATE, OR OTHER RESPONSE MECHANISMS AVAILABLE TO INVESTIGATE THE SITE		
		OTHER (DESCRIBE):		

VII. ADDITIONAL INFORMATION OR COMMENTS

Present site conditions do not warrant action at this time. The plant's concrete floor and asphalt pavement act as a cap, protecting the workers and other individuals from the potentially harmful effects of suspected subsurface contamination. Therefore, a voluntary deed notice will be requested of the current owners. This will explain the residual coal tar contamination suspected to be present at this location. Further sampling is recommended when the turkey processing plant ceases operation.

PREPARED BY:
NAME Joe Gassner SIGNATURE: Joe Gassner DATE: 3-30-98

REVIEWED BY:
NAME Julie Warren SIGNATURE: Julie L Warren DATE: 3-31-98

APPROVED BY:
NAME Gary T. Behrns SIGNATURE: [signature] DATE: 3/31/98

(revised by Missouri DNR 1/24/97)

VI. ORIGINAL ANALYTICAL SAMPLE RESULTS

Site Screening Investigation
Carthage FMGP 1&2 Sites
Jasper County, MO

Site Information:

Project Code: 4016 ESP Staff: Eric Gramlich
Site Code: 8876&8877 HWP Staff: Pia Capell & Joe Gassner
Investigation Date: 10/03/97

Sampling Protocol:

HWP requested that ESP personnel conduct sampling as part of a site screening investigation. ESP personnel utilized sampling and investigation protocols as outlined in the MDNR, ESP, Field Services Section, Standard Operating Procedures Manual.

Site Observations:

Staff arrived on-site at 1100 hours on 10/03/97. Weather conditions were sunny with temperatures in the 70s F°

Upon arrival, field personnel met with Don Hardwick of Butterball and discussed the scope of the sampling investigation. Mr. Hardwick had underground utilities marked prior to the sampling event. Mr. Hardwick was present during sample collection. The area where sampling was conducted consisted of an asphalt and concrete covered area. No outstanding surface features or evidence of former FMGP activities was apparent from the surface.

Sample Methods:

Field personnel utilized a geoprobe® to bore through the asphalt and collect samples from various depths for laboratory analysis. ESP staff utilized olfactory and visual cues to determine what samples to submit to the laboratory.

ESP personnel utilized clean acetate liners for samples collected with the geoprobe®. ESP staff transferred soil from liners into clean aluminum foil pans for sample collection.

Sampling Data:

Samples collected

Sample#	Sample location/description
97-8193	Soil grab (2-4'depth) of SB-115'. Sample consisted of rubble and coal with dark gray to black stained clay.
97-8195	Soil grab (8-10' depth) of SB-115'. Sample consisted of dark brown silt with minor amounts of clay.
97-8196	Soil grab (2-4' depth) of SB-135'. Sample consisted of dark brown to black soil with debris and coal present.
97-8198	Soil grab (6-8' depth) of SB-275'. Sample consisted of dark brown to black silty clay.

Refer to the attached site map for sample locations.

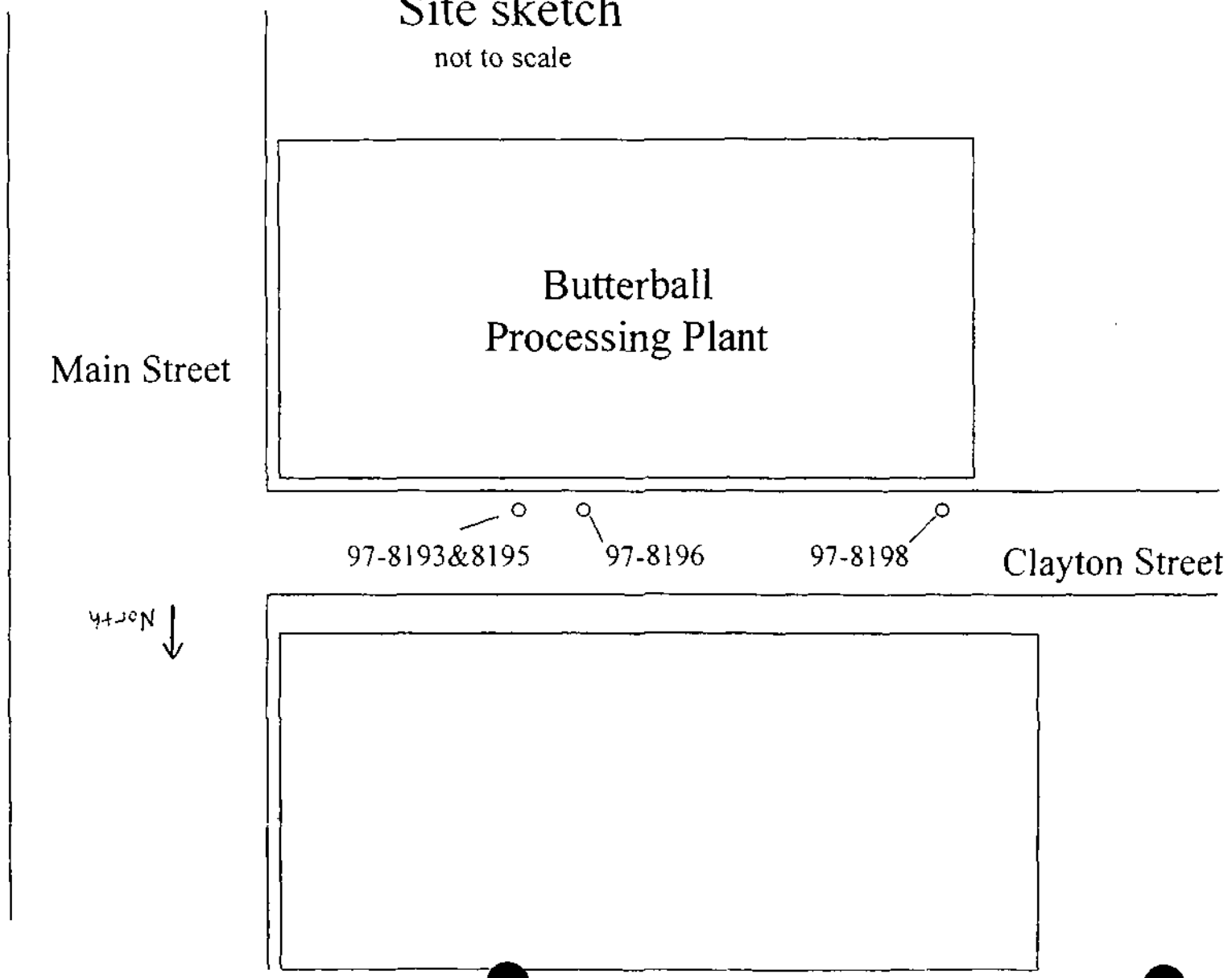
E E Gramlich Date: 1/17/98

Eric E. Gramlich
Environmental Specialist
Superfund/RCRA Unit
Environmental Services Program

EG:ch

c: Pia Capell
Joe Gassner

Carthage FMGP 1&2
Site sketch
not to scale



STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

ENVIRONMENTAL SERVICES PROGRAM

RESULTS OF SAMPLE ANALYSES

Sample Number: 97-8193
Lab Number: 97-D2620

Reported To: ERIC GRAMLICH
Affiliation: ESP
Project Code: 4016/8876

Report Date: 10/27/97
Date Collected: 10/ 3/97
Date Received: 10/ 6/97

Sample Collected by: ERIC GRAMLICH, ESP
Sampling Location: CARTHAGE FMGP #1, CARTHAGE, MO
Sample Description: SOIL GRAB BUTTERBALL WALL 115'
24-48" DEPTH

Analysis Performed	Results		Analyzed	Method
PAH Results:				
Naphthalene	8,400	ug/kg	10/ 8/97	8310
Acenaphthylene	2,600	ug/kg	10/ 8/97	8310
Acenaphthene	1,500	ug/kg	10/ 8/97	8310
Fluorene	4,200	ug/kg	10/ 8/97	8310
Phenanthrene	54,000	ug/kg	10/ 8/97	8310
Anthrancene	10,000	ug/kg	10/ 8/97	8310
Fluoranthene	30,000	ug/kg	10/ 8/97	8310
Pyrene	61,000	ug/kg	10/ 8/97	8310
Benzo(a)anthracene	17,000	ug/kg	10/ 8/97	8310
Chrysene	45,000	ug/kg	10/ 8/97	8310
Benzo(b)fluoranthene	13,000	ug/kg	10/ 8/97	8310
Benzo(k)fluoranthene	12,000	ug/kg	10/ 8/97	8310
Benzo(a)pyrene	52,000	ug/kg	10/ 8/97	8310
Dibenz(a,h)anthracene	7,800	ug/kg	10/ 8/97	8310
Benzo(g,h,i)perylene	12,000	ug/kg	10/ 8/97	8310
Indeno(1,2,3-cd)pyrene	12,000	ug/kg	10/ 8/97	8310
VOA Results:				
Chloromethane	< 25.0	ug/kg	10/ 9/97	8260
Vinyl Chloride	< 25.0	ug/kg	10/ 9/97	8260
Bromomethane	< 25.0	ug/kg	10/ 9/97	8260
Chloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Acetone	< 100	ug/kg	10/ 9/97	8260
Carbon Disulfide	< 25.0	ug/kg	10/ 9/97	8260

Analysis Performed	Results		Analyzed	Method
Methylene Chloride	< 100	ug/kg	10/ 9/97	8260
Methyl Tertiary Butyl Eth	< 25.0	ug/kg	10/ 9/97	8260
trans-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
2-Butanone	< 100	ug/kg	10/ 9/97	8260
cis-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Chloroform	< 25.0	ug/kg	10/ 9/97	8260
1,1,1-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Carbon Tetrachloride	< 25.0	ug/kg	10/ 9/97	8260
Benzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Trichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloropropane	< 25.0	ug/kg	10/ 9/97	8260
Bromodichloromethane	< 25.0	ug/kg	10/ 9/97	8260
2-Hexanone	< 100	ug/kg	10/ 9/97	8260
Trans-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
Toluene	< 25.0	ug/kg	10/ 9/97	8260
CIS-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
1,1,2-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
4-Methyl-2-Pentanone	< 100	ug/kg	10/ 9/97	8260
Tetrachloroethene	< 25.0	ug/kg	10/ 9/97	8260
Dibromochloromethane	< 25.0	ug/kg	10/ 9/97	8260
Chlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
Ethylbenzene	< 25.0	ug/kg	10/ 9/97	8260
Total Xylenes	< 25.0	ug/kg	10/ 9/97	8260
Styrene	< 25.0	ug/kg	10/ 9/97	8260
Bromoform	< 25.0	ug/kg	10/ 9/97	8260
1,1,2,2-Tetrachloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,3-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,4-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

James H. Long, Director
Environmental Services Program
Division of Environmental Quality

c: JULIE KELSEY, HWP

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

ENVIRONMENTAL SERVICES PROGRAM

RESULTS OF SAMPLE ANALYSES

Sample Number: 97-8195
Lab Number: 97-D2621

Reported To: ERIC GRAMLICH
Affiliation: ESP
Project Code: 4016/8876

Report Date: 10/27/97
Date Collected: 10/ 3/97
Date Received: 10/ 6/97

Sample Collected by: ERIC GRAMLICH, ESP
Sampling Location: CARTHAGE FMGP #1, CARTHAGE, MO
Sample Description: SOIL GRAB BUTTERBALL WALL 115'
8-10' DEPTH

Analysis Performed	Results		Analyzed	Method
PAH Results:				
Naphthalene	< 100	ug/kg	10/ 8/97	8310
Acenaphthylene	< 100	ug/kg	10/ 8/97	8310
Acenaphthene	< 100	ug/kg	10/ 8/97	8310
Fluorene	< 100	ug/kg	10/ 8/97	8310
Phenanthrene	< 100	ug/kg	10/ 8/97	8310
Anthrancene	190	ug/kg	10/ 8/97	8310
Fluoranthene	230	ug/kg	10/ 8/97	8310
Pyrene	360	ug/kg	10/ 8/97	8310
Benzo(a)anthracene	190	ug/kg	10/ 8/97	8310
Chrysene	120	ug/kg	10/ 8/97	8310
Benzo(b)fluoranthene	< 100	ug/kg	10/ 8/97	8310
Benzo(k)fluoranthene	< 100	ug/kg	10/ 8/97	8310
Benzo(a)pyrene	< 100	ug/kg	10/ 8/97	8310
Dibenz(a,h)anthracene	< 100	ug/kg	10/ 8/97	8310
Benzo(g,h,i)perylene	< 100	ug/kg	10/ 8/97	8310
Indeno(1,2,3-cd)pyrene	< 100	ug/kg	10/ 8/97	8310
VOA Results:				
Chloromethane	< 25.0	ug/kg	10/ 9/97	8260
Vinyl Chloride	< 25.0	ug/kg	10/ 9/97	8260
Bromomethane	< 25.0	ug/kg	10/ 9/97	8260
Chloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Acetone	< 100	ug/kg	10/ 9/97	8260
Carbon Disulfide	< 25.0	ug/kg	10/ 9/97	8260

Analysis Performed	Results		Analyzed	Method
Methylene Chloride	< 100	ug/kg	10/ 9/97	8260
Methyl Tertiary Butyl Eth	< 25.0	ug/kg	10/ 9/97	8260
trans-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
2-Butanone	< 100	ug/kg	10/ 9/97	8260
cis-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Chloroform	< 25.0	ug/kg	10/ 9/97	8260
1,1,1-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Carbon Tetrachloride	< 25.0	ug/kg	10/ 9/97	8260
Benzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Trichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloropropane	< 25.0	ug/kg	10/ 9/97	8260
Bromodichloromethane	< 25.0	ug/kg	10/ 9/97	8260
2-Hexanone	< 100	ug/kg	10/ 9/97	8260
Trans-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
Toluene	< 25.0	ug/kg	10/ 9/97	8260
CIS-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
1,1,2-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
4-Methyl-2-Pentanone	< 100	ug/kg	10/ 9/97	8260
Tetrachloroethene	< 25.0	ug/kg	10/ 9/97	8260
Dibromochloromethane	< 25.0	ug/kg	10/ 9/97	8260
Chlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
Ethylbenzene	< 25.0	ug/kg	10/ 9/97	8260
Total Xylenes	< 25.0	ug/kg	10/ 9/97	8260
Styrene	< 25.0	ug/kg	10/ 9/97	8260
Bromoform	< 25.0	ug/kg	10/ 9/97	8260
1,1,2,2-Tetrachloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,3-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,4-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

James H. Long, Director
Environmental Services Program
Division of Environmental Quality

c: JULIE KELSEY, HWP

STATE OF MISSOURI
Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

ENVIRONMENTAL SERVICES PROGRAM

RESULTS OF SAMPLE ANALYSES

Sample Number: 97-8196
Lab Number: 97-D2622

Reported To: ERIC GRAMLICH
Affiliation: ESP
Project Code: 4016/8876

Report Date: 10/27/97
Date Collected: 10/ 3/97
Date Received: 10/ 6/97

Sample Collected by: ERIC GRAMLICH, ESP
Sampling Location: CARTHAGE FMGP #1, CARTHAGE, MO
Sample Description: SOIL GRAB BUTTERBALL WALL 135'
2-4' DEPTH

Analysis Performed	Results		Analyzed	Method
PAH Results:				
Naphthalene	4,000	ug/kg	10/ 8/97	8310
Acenaphthylene	700	ug/kg	10/ 8/97	8310
Acenaphthene	440	ug/kg	10/ 8/97	8310
Fluorene	700	ug/kg	10/ 8/97	8310
Phenanthrene	12,000	ug/kg	10/ 8/97	8310
Anthrancene	1,600	ug/kg	10/ 8/97	8310
Fluoranthene	8,200	ug/kg	10/ 8/97	8310
Pyrene	14,000	ug/kg	10/ 8/97	8310
Benzo(a)anthracene	6,200	ug/kg	10/ 8/97	8310
Chrysene	8,900	ug/kg	10/ 8/97	8310
Benzo(b)fluoranthene	3,500	ug/kg	10/ 8/97	8310
Benzo(k)fluoranthene	4,300	ug/kg	10/ 8/97	8310
Benzo(a)pyrene	9,600	ug/kg	10/ 8/97	8310
Dibenz(a,h)anthracene	1,300	ug/kg	10/ 8/97	8310
Benzo(g,h,i)perylene	6,600	ug/kg	10/ 8/97	8310
Indeno(1,2,3-cd)pyrene	5,100	ug/kg	10/ 8/97	8310
VOA Results:				
Chloromethane	< 25.0	ug/kg	10/ 9/97	8260
Vinyl Chloride	< 25.0	ug/kg	10/ 9/97	8260
Bromomethane	< 25.0	ug/kg	10/ 9/97	8260
Chloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Acetone	< 100	ug/kg	10/ 9/97	8260
Carbon Disulfide	< 25.0	ug/kg	10/ 9/97	8260

Analysis Performed	Results		Analyzed	Method
Methylene Chloride	< 100	ug/kg	10/ 9/97	8260
Methyl Tertiary Butyl Eth	< 25.0	ug/kg	10/ 9/97	8260
trans-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
2-Butanone	< 100	ug/kg	10/ 9/97	8260
cis-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Chloroform	< 25.0	ug/kg	10/ 9/97	8260
1,1,1-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Carbon Tetrachloride	< 25.0	ug/kg	10/ 9/97	8260
Benzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Trichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloropropane	< 25.0	ug/kg	10/ 9/97	8260
Bromodichloromethane	< 25.0	ug/kg	10/ 9/97	8260
2-Hexanone	< 100	ug/kg	10/ 9/97	8260
Trans-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
Toluene	< 25.0	ug/kg	10/ 9/97	8260
CIS-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
1,1,2-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
4-Methyl-2-Pentanone	< 100	ug/kg	10/ 9/97	8260
Tetrachloroethene	< 25.0	ug/kg	10/ 9/97	8260
Dibromochloromethane	< 25.0	ug/kg	10/ 9/97	8260
Chlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
Ethylbenzene	< 25.0	ug/kg	10/ 9/97	8260
Total Xylenes	< 25.0	ug/kg	10/ 9/97	8260
Styrene	< 25.0	ug/kg	10/ 9/97	8260
Bromoform	< 25.0	ug/kg	10/ 9/97	8260
1,1,2,2-Tetrachloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,3-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,4-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

James H. Long, Director
Environmental Services Program
Division of Environmental Quality

c: JULIE KELSEY, HWP

STATE OF MISSOURI

Mel Carnahan, Governor • David A. Shorr, Director

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

ENVIRONMENTAL SERVICES PROGRAM

RESULTS OF SAMPLE ANALYSES

Sample Number: 97-8198
Lab Number: 97-D2623

Reported To: ERIC GRAMLICH
Affiliation: ESP
Project Code: 4016/8877

Report Date: 10/27/97
Date Collected: 10/ 3/97
Date Received: 10/ 6/97

Sample Collected by: ERIC GRAMLICH, ESP
Sampling Location: CARTHAGE FMGP #2, CARTHAGE, MO
Sample Description: SOIL GRAB BUTTERBALL WALL 275'
6-8' DEPTH

Analysis Performed	Results		Analyzed	Method
PAH Results:				
Naphthalene	< 100	ug/kg	10/ 8/97	8310
Acenaphthylene	< 100	ug/kg	10/ 8/97	8310
Acenaphthene	< 100	ug/kg	10/ 8/97	8310
Fluorene	< 100	ug/kg	10/ 8/97	8310
Phenanthrene	< 100	ug/kg	10/ 8/97	8310
Anthrancene	< 100	ug/kg	10/ 8/97	8310
Fluoranthene	< 100	ug/kg	10/ 8/97	8310
Pyrene	< 100	ug/kg	10/ 8/97	8310
Benzo(a)anthracene	< 100	ug/kg	10/ 8/97	8310
Chrysene	< 100	ug/kg	10/ 8/97	8310
Benzo(b)fluoranthene	< 100	ug/kg	10/ 8/97	8310
Benzo(k)fluoranthene	< 100	ug/kg	10/ 8/97	8310
Benzo(a)pyrene	< 100	ug/kg	10/ 8/97	8310
Dibenz(a,h)anthracene	< 100	ug/kg	10/ 8/97	8310
Benzo(g,h,i)perylene	< 100	ug/kg	10/ 8/97	8310
Indeno(1,2,3-cd)pyrene	< 100	ug/kg	10/ 8/97	8310
VOA Results:				
Chloromethane	< 25.0	ug/kg	10/ 9/97	8260
Vinyl Chloride	< 25.0	ug/kg	10/ 9/97	8260
Bromomethane	< 25.0	ug/kg	10/ 9/97	8260
Chloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Acetone	< 100	ug/kg	10/ 9/97	8260
Carbon Disulfide	< 25.0	ug/kg	10/ 9/97	8260

Analysis Performed	Results		Analyzed	Method
Methylene Chloride	< 100	ug/kg	10/ 9/97	8260
Methyl Tertiary Butyl Eth	< 25.0	ug/kg	10/ 9/97	8260
trans-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,1-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
2-Butanone	< 100	ug/kg	10/ 9/97	8260
cis-1,2-Dichloroethene	< 25.0	ug/kg	10/ 9/97	8260
Chloroform	< 25.0	ug/kg	10/ 9/97	8260
1,1,1-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Carbon Tetrachloride	< 25.0	ug/kg	10/ 9/97	8260
Benzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloroethane	< 25.0	ug/kg	10/ 9/97	8260
Trichloroethene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichloropropane	< 25.0	ug/kg	10/ 9/97	8260
Bromodichloromethane	< 25.0	ug/kg	10/ 9/97	8260
2-Hexanone	< 100	ug/kg	10/ 9/97	8260
Trans-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
Toluene	< 25.0	ug/kg	10/ 9/97	8260
CIS-1,3-Dichloropropene	< 25.0	ug/kg	10/ 9/97	8260
1,1,2-Trichloroethane	< 25.0	ug/kg	10/ 9/97	8260
4-Methyl-2-Pentanone	< 100	ug/kg	10/ 9/97	8260
Tetrachloroethene	< 25.0	ug/kg	10/ 9/97	8260
Dibromochloromethane	< 25.0	ug/kg	10/ 9/97	8260
Chlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
Ethylbenzene	< 25.0	ug/kg	10/ 9/97	8260
Total Xylenes	< 25.0	ug/kg	10/ 9/97	8260
Styrene	< 25.0	ug/kg	10/ 9/97	8260
Bromoform	< 25.0	ug/kg	10/ 9/97	8260
1,1,2,2-Tetrachloroethane	< 25.0	ug/kg	10/ 9/97	8260
1,3-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,4-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260
1,2-Dichlorobenzene	< 25.0	ug/kg	10/ 9/97	8260

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

James H. Long, Director
Environmental Services Program
Division of Environmental Quality

c: JULIE KELSEY, HWP

VII. REFERENCES

UNIVERSITY OF MISSOURI-ROLLA
Missouri's Technological University

School of Mines and Metallurgy

Department of Geological and Petroleum Engineering

129 V H McNutt Hall
Rolla MO 65401-0249
Telephone (314) 341-4867
FAX (314) 341-6935

Direct Line is (314) 341-4777
Fax is (314) 341-6935
30 November 1995

Mr. Tim Lacy
Division of Environmental Quality
Hazardous Waste Program
Missouri Department of Natural Resources
PO Box 176
Jefferson City, Missouri 65102
(314) 751-2582(O)/ 751-7869(FAX)

SUBJECT: Two Former Manufactured Gas Plant (FMGPs) at Carthage, Missouri

Dear Tim:

In response to your call of 20 November, 1995, here is a packet of information extracted from my files, concerning two back-to-back FMGPs at Carthage, Missouri. The site is presently occupied by the ConAgra Butterball Turkey plant and would, therefore, constitute a prime concern for health and safety of workers and from the standpoint of a widely-used food product. Site geologic conditions are such that extensive groundwater contamination is likely.

I'm caught in a bind for time and will ask that you seek the Sanborn Maps from the State Archives collection, which is what I operate from. I'd inquire at the 1st floor historical library at the Archives Building in Jefferson City.

Yours truly,

Allen W. Hatheway
Professor of Geological Engineering

encls Two AWH site summaries

1 December 1995

WORKING DRAFT

Extracted from

FORMER MANUFACTURED GAS PLANTS

Compiled by Allen W. Hatheway, Professor of Geological Engineering
University of Missouri-Rolla

USEPA No.	Location/Owner	Present Owner	Status	Sanborn Fire Insurance Maps	
	Carthage, No. 1 SE cor. Main & Limestone Then Claxton & N. Main Sts. Now off 411 N. Main St. Carthage Gas Light Co Jasper CO	ConAgra, Div Country Pride Foods of UK -- also Western Resources, Inc., Topeka, as successor gas company	Unknown	Mar 1884 Jul 1893 Oct 1902 Nov 1915	Dec 1888 Jun 1897 Dec 1909 Feb 1925

07Aug77 Messrs. Gray, Bowman and Lewis make proposal for a gas works, to the City Council; same company owns a gas works in Joplin, MO

16Aug77 City Council awards 20-year franchise for operation of a manufactured gas works and to supply street lighting,

03Jul78 Completion of the gas works at a cost of $40,000; Ownership now the firm of Gray, Bowman and Lewis, of St. Louis, MO. City lighted for first time with gas; Wm. L. Carver, of Joplin, made Superintendent of the works.
Operates under name of Carthage Gas Company
Average gas output at ca. 4.0 E6 cf gas

1879 Manufactures over 2.5 E6 cf of gas

1881 Manufactures over 5.0 E6 cf of gas

1884 Far well appears on Sanborn map, never changes its location; obviously a major factor in potential site contamination

1893 Name changes to Carthage Light and Fuel Co (recognizing coke production?)
Average gas output at 4.75 E6 cf/yr

1900-1901 Operates as Carthage Light Co.
Average gas output at 8.5 E6 cf/yr

1902-1904 Average gas output at 10.0 E6 cf/yr

22Sep02 Attempt by S.A. Stuckley and I.C. Hodson, as successors to interests of Mr. D.C. Brainard, to organize a third gas company to have operated in Carthage, now that Carthage no. 2. had gone out of business. Brainard must have been a promoter and had found it necessary to sell out to locals, who place an advertisement saying that if the ordinance is

passed the ownership of the "present Gas Co." and will be surrendered to the City and canceled unless transferred to a satisfactory home company in which all citizens will be given an equal opportunity to have an interest."

Summer 05. Carthage Light, Heat & Power Co. expects to be purchasing natural gas from Kansas

1905-1907: Operates as Carthage Light, Heat & Power Co.
Average gas output at 13.5 E6 cf/yr

1908: Gas works non-operational

1909: Sanborn map shows site vacant and structures demolished

1935: The defunct Carthage Gas Co. is taken over by "a holding company", and "later became the Gas Service Company"

post-1935: Gas Service Co. obtains holdings of former Carthage Gas Co.; this is why Western Resources, Inc., is keeping (1993) such a low profile.

10Mar49: Lot 420 purchased by Carthage Foundry & Machine Co., a manufacturer of, among other items, manhole covers found in SW Missouri

30Jun72 Carthage Foundry & Machine Co. transfers lots 420,421 and 422 to United Bank of Carthage

ca. 1970 Property had been transferred to L. Shriber Cheese Co., now owned by Country Pride Foods
Three buildings and asphaltic concrete pavement cover the entire property, including the site of Carthage No. FMGP
Original Carthage Ice and Cold Storage Co. plant, believed to have been powered by manufactured gas, has been incorporated into the turkey processing plant

01Jun79: L.C., Shriber Cheese Co. sells its property to Country Pride Foods, for use by ConAgra "Butterball" Turkey processing plant now occupying the property

01Jun79: Bank returns lots 420,421,422 to Carthage Foundry & Machine Co.

15Jun79: Carthage Foundry & Machine Co. sells lots 420,421 and 422 to Country Pride Foods, Inc.

08Sep93: AWH and DRA visit site; took photos; note location below present "Butterball" Turkey processing plant; street names have been changed; geologic setting appears to be within a highly-porous river valley, supporting the non-changing presence of a large tar well; NAPLs and LAPLs probably found in a long, narrow, down-valley contamination plume; used public library, obtained above references and blowbacks of Sanborn maps from Chadwick-Healy microfilm.
Western Resources, Inc., Topeka was knowledgeable of the site, but were not helpful on receiving requests for information

Estimated site stratigraphy

Quaternary alluvium and fluvial soils	
Post-MS hillside colluvium/residual silty, clayey soils	
Mississippian Warsaw Fm. limestone	? to 150 ft thick ; uppermost aquifer favors breccia zones/horizons; GW may vary from few feet in alluvium to (-) 50 ft in rock strata
Mississippian St. Louis Fm. massive limestone	? to 50 ft thick;

Nearby Spring River is known to be gaining in this reach; could have spread FMGP contaminants significantly downstream

1 December 1995

WORKING DRAFT

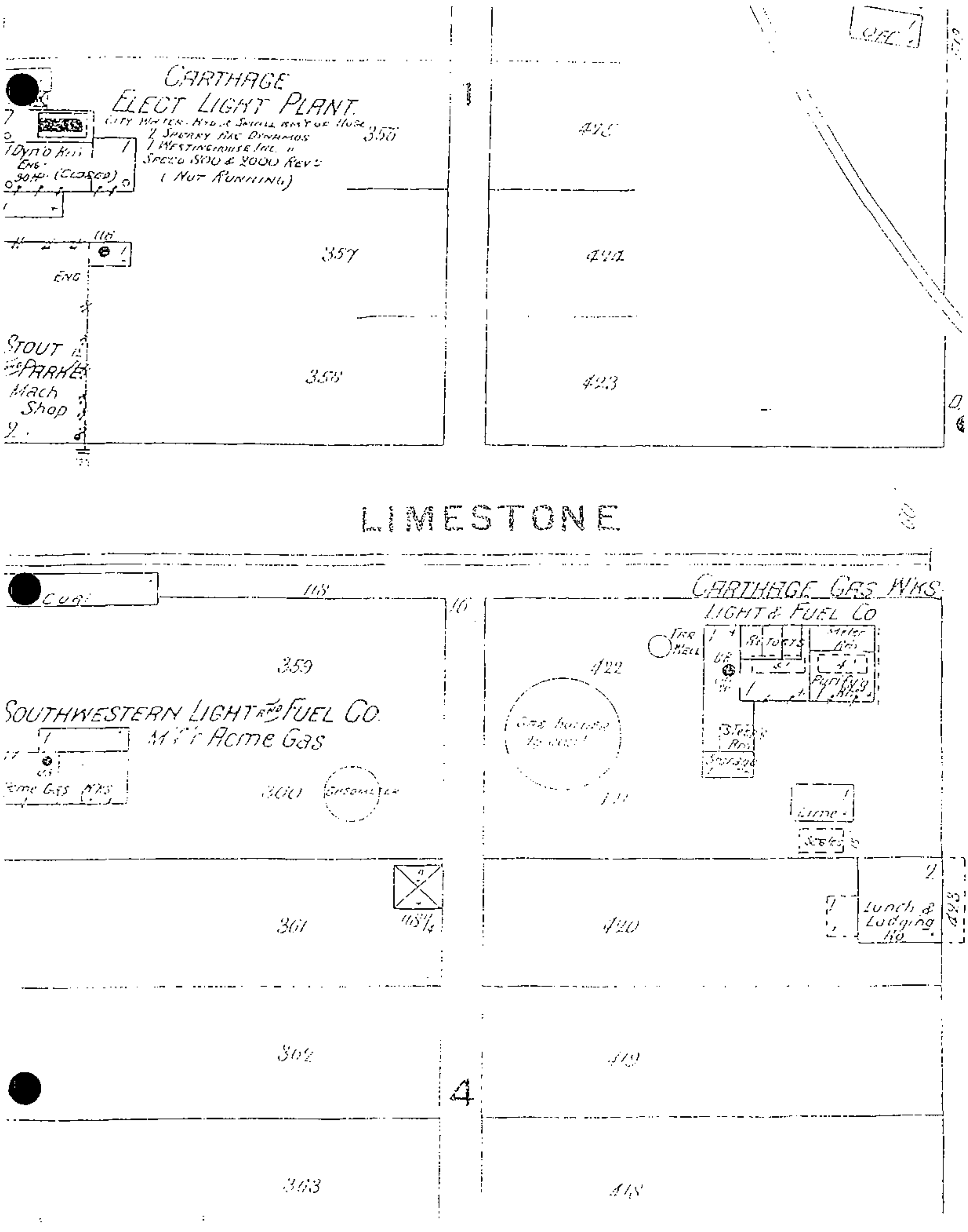
Extracted from

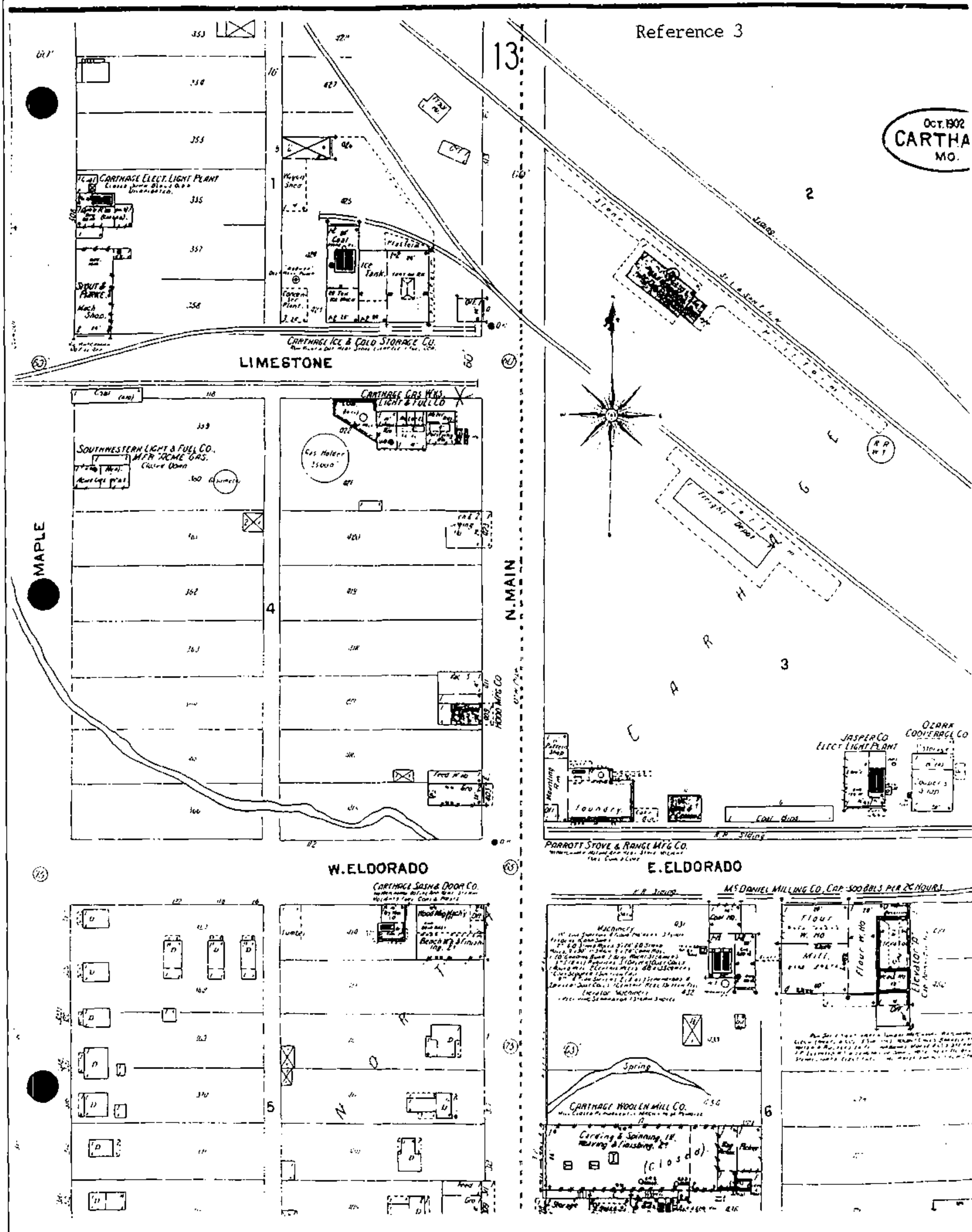
FORMER MANUFACTURED GAS PLANTS

Compiled by Allen W. Hatheway, Professor of Geological Engineering
University of Missouri-Rolla

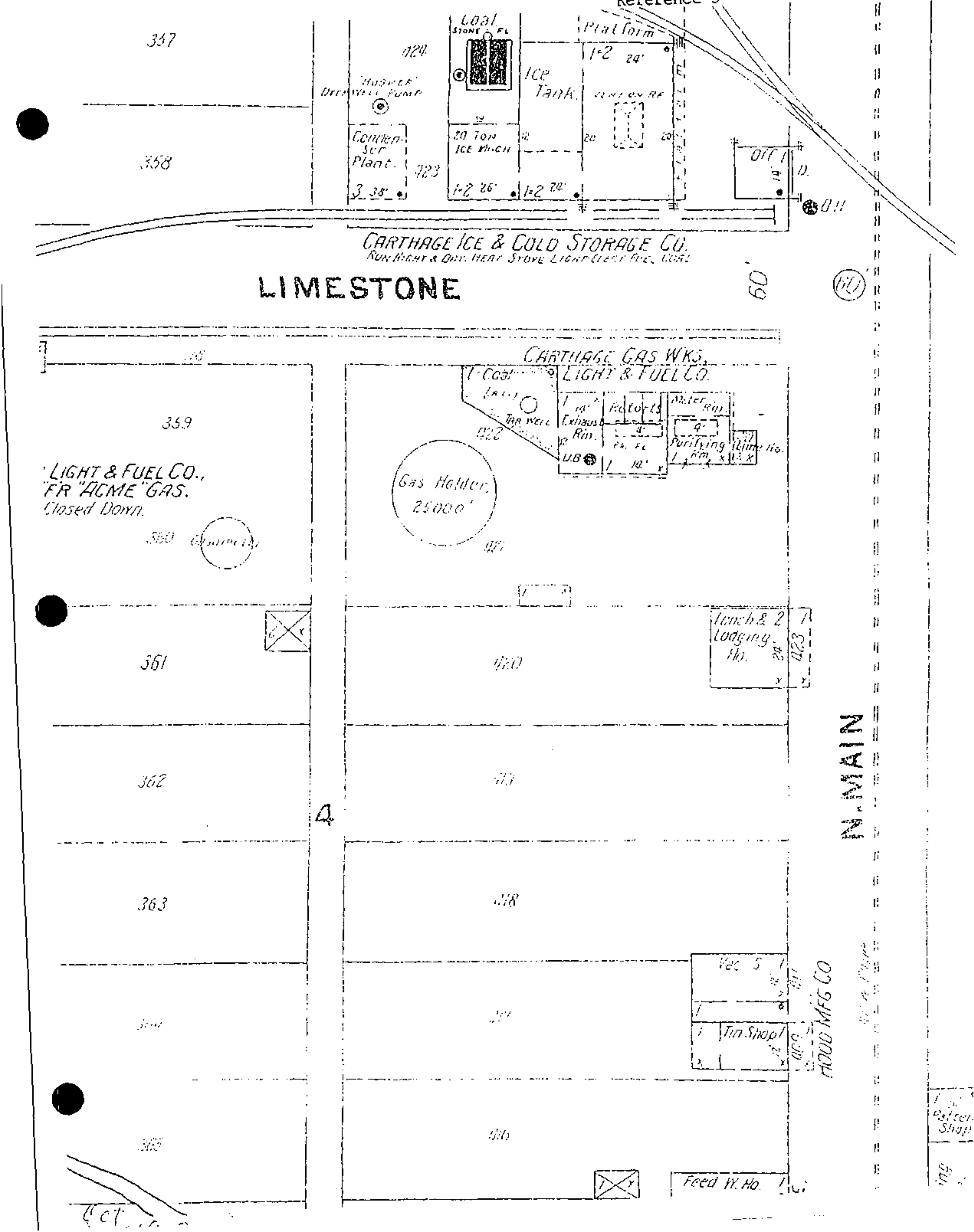
USEPA No	Location/Owner	Present Owner	Status	Sanborn Fire Insurance Maps	
	Carthage, No. 2 SW corner Garrison & Limestone Streets Now 411 N. Main St. Southwestern Light & Fuel Co. manufacturing "Acme" Gas Later, Quapaw Gas Co. Jasper CO	ConAgra Div. of Country Pride Foods of UK	Informed by student team	Mar 1884 Jul 1893 Oct 1902 Nov 1915	Dec 1888 Jun 1897 Dec 1909 Feb 1925

1888	First appears on Sanborn map; back-to-back with Carthage No. 1; gas storage holder appears to be about 25 percent of that of Carthage No. 1.
1902	Appears on Sanborn map as "closed down"
1909	Appears on Sanborn map, but not noted as "closed down"; therefore possibly active.
Nov 1915:	Sanborn map shows site vacant.
1916:	City Directory: Quapaw Gas Co. present and located at Fairview and Garrison Streets (AWH believes this to have been a distributor of natural gas piped in from Kansas (though no direct information to that fact).
08Sep93.	AWH and DRH visit site; Take photographs; No site contact with persons on property.


CARTHAGE
ELECT LIGHT PLANT
2 SPERRY ARC DYNAMOS
1 WESTINGHOUSE INC.
SPEED 800 & 2000 REVS
(NOT RUNNING)
(CLOSED)
350
357
358
ENG
STOUT & PARKER
Mach Shop
425
424
423
LIMESTONE
Coal
118
116
359
SOUTHWESTERN LIGHT AND FUEL CO.
MFG Acme Gas
Acme Gas WKS
360
GASOMETER
CARTHAGE GAS WKS.
LIGHT & FUEL CO
Tar Well
Retorts
Meter Rm
Purifying Rm
Storage
422
Lime
Scales
361
118 1/4
420
Lunch & Lodging Ro.
362
419
4
363
418

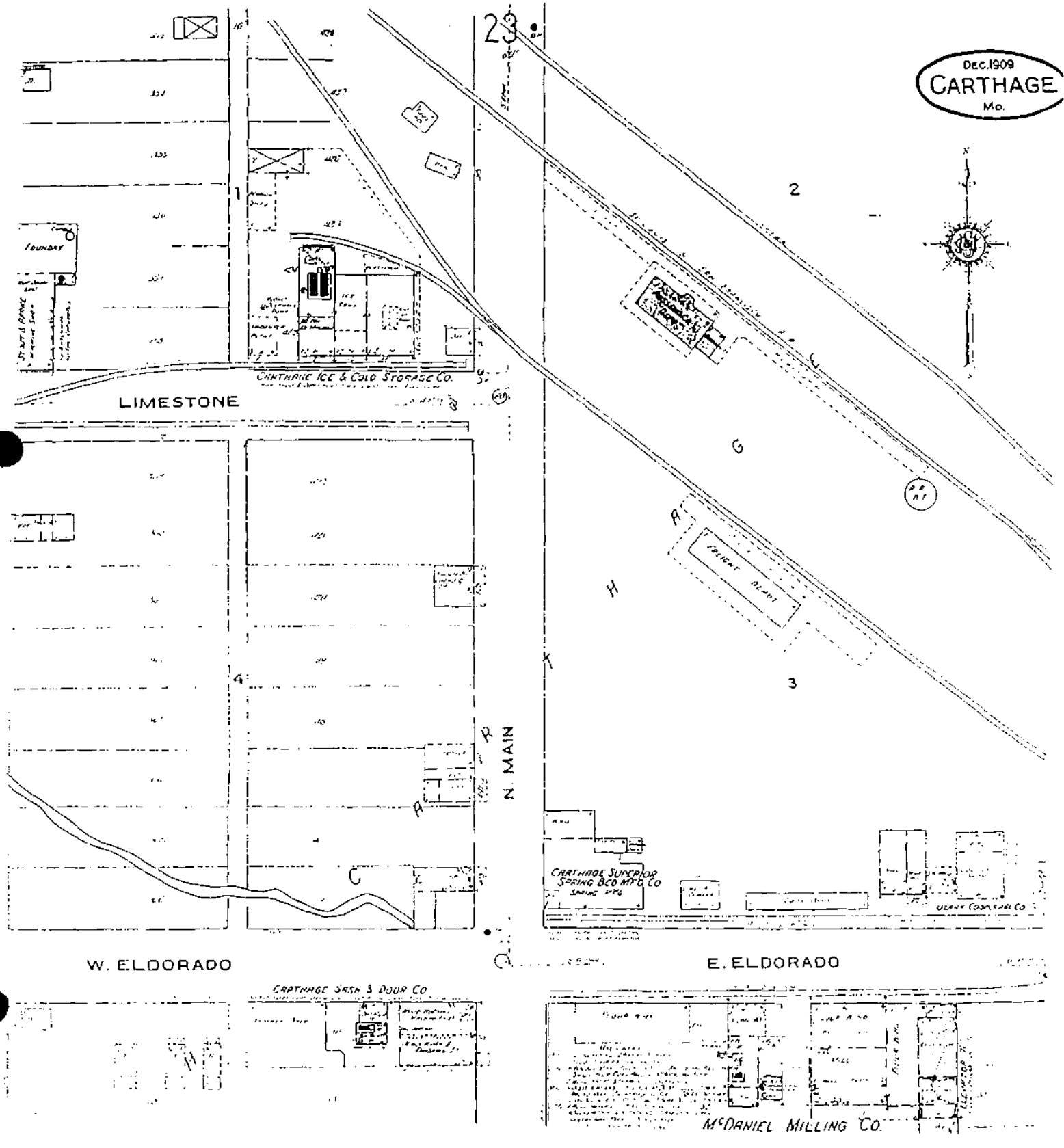

Reference 3
13
Oct. 1902
CARTHA
MO.
CARTHAGE ELECT. LIGHT PLANT
STOUT & PARKE'S Mach. Shop.
CARTHAGE ICE & COLD STORAGE CO.
Ice Tank
LIMESTONE
CARTHAGE GAS WKS. LIGHT & FUEL CO.
SOUTHWESTERN LIGHT & FUEL CO. MFR. "ACME" GAS. Closed Down
Gas Holder
MAPLE
N. MAIN
Freight Depot
CARTHAGE
JASPER CO. ELECT. LIGHT PLANT
OZARK COOPERAGE CO.
Foundry
Coal Bins
PARROTT STOVE & RANGE MFG. CO.
W. ELDORADO
E. ELDORADO
CARTHAGE SASH & DOOR CO.
Lumber
McDANIEL MILLING CO. CAP. 500 BBLS. PER 24 HOURS.
Flour Mill
Elevator
Spring
CARTHAGE WOOLEN MILL CO.
Carding & Spinning 1st. Weaving & Finishing 2nd.
(closed)
NORTH
1
2
3
4
5
6

Reference 3



LIMESTONE
N. MAIN
CARTHAGE ICE & COLD STORAGE CO.
Coal
Platform
Ice Tank
20 Ton Ice Mach
Conden-ser Plant.
CARTHAGE GAS WKS, LIGHT & FUEL CO.
Retorts
Exhaust Rm.
Purifying Rm.
Meter Rm.
Gas Holder 25000'
Tar Well
LIGHT & FUEL CO.,
"FR "ACME" GAS.
Closed Down.
Lunch & 2 Lodging Ho.
Tin Shop
HOOD MFG CO
Feed W. Ho.
Off.
Oil
357
358
359
361
362
363
60'
60
4

Reference 4


Dec. 1909
CARTHAGE
Mo.
23
1
2
3
4
LIMESTONE
FOUNDRY
CARTHAGE ICE & COLD STORAGE CO.
N. MAIN
W. ELDORADO
E. ELDORADO
CARTHAGE SUPERIOR SPRING BED MFG CO
CARTHAGE SASH & DOOR CO.
McDANIEL MILLING CO.